Article

Inducing Effects of Illegal Drugs to Improve Mental Health by the Self-Regulation Therapy: A Pilot Study

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Abstract: Background: This study consists of a brief psychological intervention, which uses the Self-Regulation Therapy (SRT, procedure based on suggestion and classical conditioning), to improve coping with stress and emotionality by reproducing the positive effects of illegal drugs: cannabis, cocaine, ecstasy. Method: 15 volunteers (8 males, 7 females), with a mean age of 24.67 (SD = 4.43), underwent intervention to improve their coping with stress and emotionality using SRT. They carried out pre- and post-intervention scores for 10 days and during a 4-week follow-up. The employed instruments were: COPE (Coping Skills Inventory) and PNAS (Positive and Negative Affect Schedule). Results: SRT was superior to non-intervention for the 4 coping strategies (η^2= .829, .453, .411 and .606) and for positive (η^2= .371) and negative emotionality (η^2= .419). An improvement in scores was evidenced in the follow-up scores compared to the pre-intervention measures. Conclusions: This study shows for the first time that it is possible to use illegal drugs, considered harmful to public health, to improve young people's coping capacity and emotionality by reproducing their positive effects with SRT.

Keywords: Self-Regulation Therapy; Coping strategies; Emotionality; Drugs

1. Introduction

A broad international consensus has been reached on the dangerousness and harmful effects of drugs for public health, especially illegal drugs [1,2].

Those drugs whose effects will be used in this study, cannabis, cocaine and ecstasy, are currently considered narcotics, and are subject to international control and classification. Cocaine and cannabis are classified in schedule I of the 1961 Single Convention on Narcotic Drugs, and are considered substances that are highly addictive and liable to abuse. Cannabis has also been classified in schedule IV until very recently, and is considered to have particularly dangerous properties, and little or no therapeutic value. Ecstasy is classified in schedule I of the Convention on Psychotropic Substances of 1971, and is considered a drug that presents a high risk of abuse, and poses a particularly serious threat to public health with little or no therapeutic value [3].

It is evident that illegal drugs are used because of their positive effects. For example, Boys et al. [4] found that the most popular functions for using drugs, as cannabis, cocaine and ecstasy, were to relax (96.7%), become intoxicated (96.4%), keep awake at night while socializing (95.9%), enhance an activity (88.5%) and alleviate depressed moods (86.8%).

Would it be possible to find the way to take advantage of the positive effects of drugs by eliminating or reducing their negative effects at the same time? There is a psychological technique that has provided this possibility: the Self-Regulation Therapy (SRT).

The SRT is a psychological procedure created by Amigó in the 1990s [5], based on suggestion from the cognitive-behavioral perspective of hypnosis, and was especially

designed to reproduce drug effects (for a review of the theoretical foundations and main applications of this procedure, see [6].

Briefly, in the SRT, several sensory recall exercises are used to teach subjects how to voluntarily reproduce various physical sensations that are initially provoked by real stimuli. These sensations are associated with cues so that subjects are able to reproduce the effects later on only with their imagination. At the end, participants are told that, as they have previously performed exercises, their minds are highly activated and receptive, which means that they can respond to the therapist's verbal suggestions without having to be trained for each new session. During subsequent sessions, the entire procedure is shortened. The procedure is described in detail elsewhere [7].

The background of the SRT is very scarce as only few papers exist about the voluntary reproduction of the effects of drugs using suggestion; they are old publications and case studies with no experimental basis. In the very few cases about the clinical use of drug effects, it is only applied to treat addictions or as Psychedelic-Assisted Psychotherapy for emotional disorders (for a detailed review, see [6]).

The SRT is the first psychological procedure based on reproducing the effects of drugs whose effectiveness during single sessions in reproducing such diverse drugs as heroin, cocaine, ecstasy, cannabis, amphetamine and methylphenidate to have been well demonstrated [7-9]. Seeing as the SRT can be used to improve positive moods and to reduce negative ones, it has been successfully used to treat patients with stress, anxiety and depression. However there are only two published cases; one is a case study [10] and the other one is a single case experimental design [11].

This article shows, for the first time, the experimental application of a brief psychological intervention in a group of volunteers, using the SRT to improve not only their ability to cope with stress, but also positive emotionality, while reducing negative emotionality. We use a within-subjects experimental design with a group of 15 young people who were taking drugs like cannabis, cocaine and ecstasy. They had to reproduce these drug effects using the SRT to improve their coping skills with stress and their emotionality.

It is emphasized that this is a brief intervention whose real objective is to produce a rapid intense feeling of well-being, specifically to improve and strengthen coping capacity and emotionality during a short period of time, which may well be very useful in a specific situation of crisis, insecurity or low mood, and it is not a prolonged psychotherapy employed to solve or deal with all the participants' problems or pathological symptoms. The participants or patients can repeat, and thus strengthen, training as often as necessary. Obviously it is a type of intervention that can be used very profitably to support conventional psychotherapy.

No patients participated but students and workers volunteers. So this procedure can be considered part of the movement of positive psychology [12]. These authors focus on psychological interventions that increase individual happiness, and they found that several positive interventions lastingly increased happiness and decreased depressive symptoms.

The brief psychological intervention herein used is based on two therapeutic programs: 1) enhance positive emotions in your life and better cope with stress [7]; 2) increase positive emotions with a suggestion and drugs program [13]. It is an adaptation that focuses above all on managing strategies for coping with stress and positive and negative emotions, which reveals an important field of clinical applications. This approach emphatizes the application of a personalized intervention (different drugs chosen by each

participant, as well as the type of problems they want to face), with collecting intensive measures data prior and posterior to therapy in order to obtain its dynamic evolution [14].

The hypotheses of this study are: 1) participants will be able to improve coping skills with a more positive view of problems, a more active approach to them, and a better feeling of personal growth; 2) they will also be able to increase their positive emotionality and to reduce their negative one.

2. Materials and Methods

2.1. Participants

This study included 15 participants (8 males, 7 females), who were students (40%) and employees (60%) from the city of Valencia and cities in eastern Spain. Their mean age was 24.67 (SD = 4.43) years old and their age range was 20–34 years old.

Sampling was not random due to the nature of this study. Drug users were sought and, as we will see later on, those who responded sufficiently to the general suggestions and drug effects were subsequently selected.

This study was also approved by the Ethics Committee of the University of Valencia (Spain) in 2017.*9.7.* (Proyect identification code: H1499339130100).

2.2. Instruments

• Barber Suggestibility Scale (BSS) [15]. To evaluate the participants' suggestibility level, the Spanish translation and adaptation prepared by [16] of the BSS were used. The BSS was designed to be administered individually, and flexible in its use because it can be administered with or without hypnotic induction, and can be scored objectively or subjectively (OS and SS, respectably). This scale is composed of eight standardized test suggestions as follows: Arm Lowering, Arm Levitation, Hand Lock, Thirst "Hallucination," Verbal Inhibition, Body Immobility, "Posthypnotic-Like" Response, Selective Amnesia. In a Spanish sample composed mainly of students, α = .76 was obtained for OS [17]. Reliability indices were also obtained in the clinical population [18]: OS (α = .70); SS (α = .80).

• COPE Inventory [19]. COPE is a 60-item Likert-type inventory. The scale score goes from 1 (no effect) to 4 (maximum effect). This is a multidimensional coping inventory to assess the different ways in which people respond to stress. This instrument was designed to assess 15 conceptually distinct coping methods. We used the situational format. The instructions for this version ask the respondents to indicate the extent to which they have been engaged in each coping response during a particular period of time. We obtained COPE ratings using two different temporal instructions. The subjects rated how they felt: (a) "today" (Today) and (b) "during the past week" (Past Week). We used the Spanish adaptation of [20]. COPE is composed of 15 scales. For the purposes of this study, four scales were chosen: a) Planning and Active Coping (6 items), α = .78; b) Positive Reinterpretation (3 items), α = .64; c) Personal Growth (2 items), α = .60; d) Behavioral Disengagement (3 items), α = .75.

• Positive and Negative Affect Schedule (PANAS) [21]. This scale consists of a number of words that describe different feelings and emotions, and comprises two 10-item mood scales on the Positive and Negative Affect. As with COPE, we obtained PANAS ratings using two different temporal instructions. The subjects rated how they felt: (a) "today" (Today) and (b) "during the past week" (Past Week). We used the Spanish adaptation from Sandin et al. [22]. Cronbach's coefficients were high, for both men [α = .89 (PA), α = .91 (NA)], and women [α = .87 (PA), α = .89 (NA)].*2.3.*

2.3. Procedure

First, an informative meeting was held in order to collect epidemiological and drug use information, and was when informed consents were signed. In addition, the participants filled in the COPE and PANAS scales. The subjects rated how they coped with stress and felt during the past week. This was the pre-intervention record (Pre-COPE and Pre-PANAS).

Afterward, they were asked to fill in the COPE and PANAS scales at home for 10 days in relation to how they felt at the end of the day. The records of these 10 days were considered the Control Condition (CC).

After completing the 10 days, the suggestibility level and ability to reproduce drug effects were evaluated.

The exclusion criteria were: not reaching medium-low levels of suggestibility (BSS), not reproducing at least three sensations of the drug chosen during the first reproduction of drug effects.

Next three training sessions with SRT were held to improve the reproduction of the chosen drug (11 chose cannabis, 2 cocaine and 2 ecstasy), the ability to use these effects therapeutically (improve coping with problems and emotionality) and the capacity to apply the technique autonomously at home and in any other circumstance or place.

Afterward, they should practice it at home for 10 days (Intervention Condition, IC) by filling in the COPE and PANAS scales at the end of the day, and reflecting on how they have behaved and felt all day. On these days, two supervision sessions were held with the therapist to check how they worked alone at home and to practice how to do this in any other place and circumstance.

Finally, a month follow-up was carried out. The subjects had to fill in the COPE and PANAS scales at home for 4 weeks by answering how they felt and behaved throughout each week. It took the same response format as the pre-intervention record. A schematic of the procedure is presented in Figure 1 for clarity.

Figure 1. Procedure Scheme

Evaluation	Control Condition (CC)	Training sessions	Intervention Condition (IC)	Follow-up
Epidemiological data Pre-Questionnaires: ▪ Drugs use ▪ PANAS ▪ COPE Informed consent signature	**Objective:** Fill in two questionnaires at the end of the day over a period of 10 days. **Instruments:** ▪ PANAS ▪ COPE	**Objective:** Assess hypnotic susceptibility with BSS (OS and SS) Learn Self-Regulation Therapy (SRT) and be able to reproduce the effects of drugs. Apply the exclusion criteria.	**Objective:** Apply at home for 10 days the reproduction of the positive effects of drugs with the SRT, and fill in two questionnaires at the end of the day **Instruments:**	**Objective:** Keep the effects for 1 month. **Instruments:** ▪ PANAS ▪ COPE

	▪ PANAS
	▪ COPE
	It includes 2 supervision sessions.

BSS: Barber Suggestibility Scale; OS: Objective Score; Subjective Score; SRT: Self—Regulation Therapy; COPE: Coping Inventory; PANAS= Positive and Negative Affect Schedule.

2.4. Statistical analysis

We performed Two-way Repeated Measures ANOVA from the General Linear Model statistical procedure. The two factors were: Time (10 levels) and Intervention (2 levels).

To carry out and interpret the analyses, the used criteria were the following: 1) If the hypothesis of sphericity was not rejected, we choose the univariate F statistic of assumed sphericity as in this case it is the most powerful test, especially for small sample sizes; 2) If the hypothesis of sphericity was rejected, we choose the F value by applying a correction index called epsilon, either the Greenhouse-Geisser or Huynh-Feldt estimation, depending on the highest value of power. If power was the same, the most conservative estimate was chosen, which was Greenhouse-Geisser; 3) In the event of extreme non-compliance with the assumption of sphericity, the Lower Limit estimator was chosen; 4) We omitted presenting the identification of all these tests in the tables for space reasons; 5) The degrees of freedom for intervention were 1, and for Time and interaction, were 9; 6) The pairwise comparisons were based on estimated marginal means with Bonferroni adjustment for multiple comparisons.

All the statistical tests were performed with version 24 of SPSS.

3. Results

The drugs most frequently used by the participants in the present study last year were: alcohol (n = 15), cannabis (n = 15), tobacco (n = 12) and tranquilizers (n = 11). In the last month, they were: cannabis (n = 14), alcohol (n = 14) and tobacco (n = 10).

The participants chose the drug they wished to reproduce with the SRT: eleven chose cannabis, two cocaine and two ecstasy.

Table 1 shows the mean comparisons between Hypnosis and the SRT on OS and SC, using the Wilcoxon nonparametric rank test. For both scores, the SRT was superior to hypnosis (Z= -2.363; p>.05 and Z= -2.142; p>.05, respectively).

Table 1. Wilcoxon Signed Rank Test for Mean Comparisons of Hypnosis-Self-Regulation Therapy

		Mean	*SD*	*Z*	*p*
Objective Scores (BSS)	H	5,167	1,0801	-2.363	.018
	SRT	12,27	2,789		
Subjective Scores (BSS)	H	6,133	,7432	-2.142	.032
	SRT	14,27	2,374		

BSS = Barber Suggestibility Scale; H: Hypnosis; SRT = Self-Regulation Therapy.

Table 2 shows the ANOVA results for the COPE and PANAS variables. We can observe that the SRT had a statistically significant effect for the four coping strategies, but time also a significant effect for Planning and Active Coping and Personal Growth.

Table 2. Two-Way Repeated Measures ANOVA of COPE and PANAS Variables

	Factors	*Sig.* *Mauchy's* *W*	*F*	*Df*	*Mean* *Square* *Error*	*Df of* *MSE*	*Sig.*	*Partial* *Eta* *Squared*	*Observed* *Power*
PAC	Intervention	-	68.013	1	20,263	14	.000	.829	1.000
	Time	.015	3.243	9	3.719	111.35	.002	.188	.962
	Interaction	.003	3.034	1	39.313	14	.103	.178	.368
PR	Intervention	-	11.596	1	9.210	14	.004	.453	.886
	Time	.086	1.477	9	1.460	126	1.63	.095	.681
	Interaction	.245	.730	9	1.658	126	.680	.50	.348
PG	Intervention	-	9.756	1	5.253	14	.007	.411	.827
	Time	.134	1.983	9	.649	126	.047	.124	.831
	Interaction	.008	1.438	1	.779	14	.250	.093	.201
BD	Intervention	-	21.499	1	17.713	14	.000	.606	.990
	Time	.001	1.184	1	29.215	14	.295	.078	.174
	Interaction	.057	1.746	9	3.304	126	.085	.111	.769
AP	Intervention	-	8.260	1	119.869	14	.012	.371	.762
	Time	.038	2.648	8.208	30.588	114.91	.009	.161	.922
	Interaction	.006	1.652	1.000	50.974	84.197	.220	.106	.224
AN	Intervention	-	10.088	1	110.777	14	.007	.419	.839
	Time	.000	2.073	1.000	192.770	14.000	.172	.129	.269
	Interaction	.000	2.121	1.000	205.399	14.000	.167	.132	.274

COPE = Coping inventory; PANAS= Positive and Negative Affect Schedule; SRT= Self-Regulation Therapy; PAC= Planning and Active Coping; PR=Positive Reinterpretation; PG= Personal Growth; BD= Behavioral Disengagement; AP = Positive Affect; AN = Negative Affect; *Df*= Degrees of freedom; The observed power has been calculated using alfa=.05

Hence intervention had a significant main effect [$F_{(1,14)}$ = 68.013; p<.001; MSE = 20,263; η^2= .829], on Planning and Active Coping, as did time [$F_{(9, 111.353)}$ = 3.243; p<.05; MSE = 3.719; η^2= .188]. The effect of the interaction was not significant.

Intervention also had a significant main effect [$F_{(1,14)}$ = 11.596; p<.05; MSE = 9.210; η^2= .453] on Positive Reinterpretation, while the effects of time and interaction were not significant.

Intervention had a significant main effect on Personal Growth [$F_{(1,14)}$ = 9.756; p<.05; MSE = 5.253; η^2= .411], as did time [$F_{(9, 126)}$ = 1.983; p<.05; MSE = .649; η^2= .124], while the effect of interaction was not significant.

For Behavioral Disengagement, a significant main effect was observed with intervention [$F_{(1,14)}$ = 21.499; p<.001; MSE = 17.713; η^2= .606], whereas the effects of time and interaction were not significant.

With the PANAS scales, intervention had a significant main effect [$F_{(1,14)}$ = 8.260; p<.05; MSE = 119.869; η^2= .371] on the PA schedule, as did time [$F_{(8.208, 114.919)}$ = 2.648; p<.05; MSE = 30.588; η^2= .161], but the effect of the interaction was not significant. Moreover, intervention had a significant main effect [$F_{(1,14)}$ = 10.088; p<.05; MSE = 110.777; η^2= .419] on the NA schedule, with insignificant effects for time and interaction.

Table 3 offers the results of the comparison made of the means between the CC and the IC for the four COPE strategies and the PANAS scales. The intervention with the SRT was significantly higher than the control condition in the four coping strategies (p <.001 for Planning and Active Coping and Behavioral Disengagement; p <.05 for Positive Reinterpretation and Personal Growth), and also in the PANAS scales (p <.05).

Table 3. Pairwise Comparisons of COPE and PANAS Variables

	Conditions	*Estimates*		*Mean Difference*	*Std. Error*	*Sig.*
		Mean	*SD*			
Planning and Active Coping	Control	14.933	.612	-4.287	.520	.000
	Intervention	19.220	.484			
Positive Reinterpretation	Control	9.093	.375	-1.193	.350	.004
	Intervention	10.287	.243			
Personal Growth	Control	6.393	.176	-.827	.265	.007
	Intervention	7.220	.273			
Behavioral Disengagement	Control	9.333	.365	2.253	.486	.000
	Intervention	7.080	.345			
Positive Affect	Control	31,933	1,110	-3,633	1,264	,012
	Intervention	35,567	1,534			
Negative Affect	Control	17,933	1,254	3,860	1,215	,007
	Intervention	14,073	,692			

COPE = Coping inventory; PANAS= Positive and Negative Affect Schedule.

Table 4 shows only the results of the ANCOVAS, which were significant when the pre-intervention variables of both COPE and PANAS were included. The effect of time on Planning and Active Coping strategy became non significant, while the interaction of

the pre-intervention covariate with the strategy itself was significant. A significant effect of the SRT was observed for the Positive Reinterpretation and a significant interaction with the pre-intervention score in the same strategy (p <.05) that is, the favorable predisposition to use positive restructuring strategies the week before the study started influenced the therapeutic success.

Table 4. Two-Way Repeated Measures ANCOVA of Some Coping Strategies with Pre-Intervention

	Factors	*Sig. Mauchy 's W*	*F*	*Df*	*Mean Square Error*	*Df of MSE*	*Sig.*	*Partial Eta Squared*	*Observed Power*
PAC	Pre-PAC		5.689				.033	.304	.998
	Intervention	-	15.270	1	243.113	13	.002	.540	.950
	Intervention *Pre-PAC		4.814	1	76.711		.047	.270	.529
	Time	.058	.559	9	1.858	117	.828	.041	.263
	Interacción	.030	1.338	5.995	39.313	77.931	.250	.093	.494
RP	Pre-RP		9.613				.008	.425	.817
	Intervention	-	9.795	1	70.097	13	.008	.430	.824
	intervention*Pre-RP		5.019	1	35.917		.043	.279	.545
	Time	.123	1.443	9	2.182	117	.178	.100	.666
	Interacción	.100	.708	9	1.175	117	.701	.052	.335

PAC= Planning and Active Coping; PR= Positive Reinterpretation; *Df*= Degrees of freedom; The observed power has been calculated using alfa=.05

Figure 2 depicts how the scores during the CC represent a very stable curve and how the scores during the IC are clearly higher for the first three coping strategies and are lower for Behavioral Disengagement. Stable curves were observed for the PANAS scales in CC (see Figure 3). Moreover, the PA scores slightly rose on the last days. Even so, the two scales followed the expected curve in IC, with PA above the CC curve in most scores displaying an upward trend, while the NA scores in IC were below no treatment.

Figure 2. COPE Variables in Control Condition and Intervention Condition
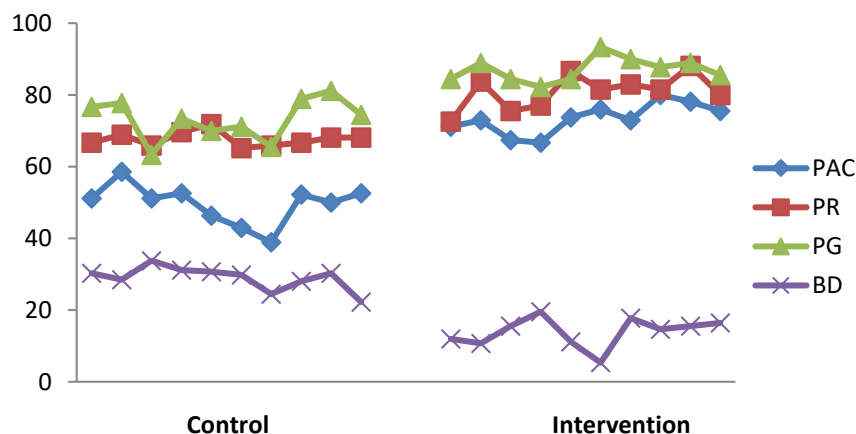
COPE = Coping Inventory; PAC= Planning and Active Coping; PR=Positive Reinterpretation; PG= Personal Growth; BD= Behavioral Disengagement.

**Figure 3.** PANAS Variables in Control Condition and Intervention Condition
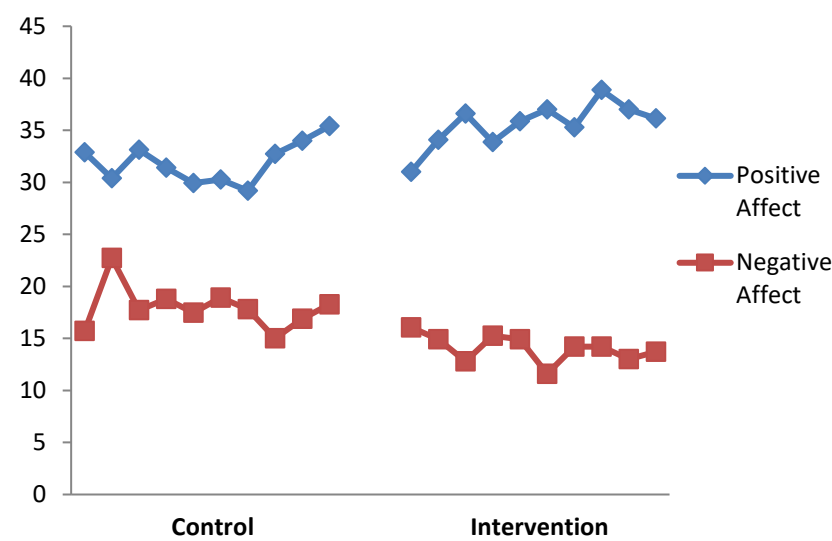
PANAS= Positive and Negative Affect Schedule.

Figures 4 and 5 show the follow-up scores of the four coping strategies and the PANAS scales, respectively. The COPE scales revealed different score ranges (distinct numbers of items), and to match them ipsative scores were obtained to better clarity the interpretation of the figures. The first point represents the score before the beginning of the first phase (CC), and the remaining four points represent the scores of the 4 weeks follow-up. We can see how the positive coping skills (Planning and Active Coping, Positive Reinterpretation and Personal Growth) increased during the follow-up, while the negative coping strategies (Behavioral Disengagement) obtained lower scores. The same applies the PANAS Positive Affect and Negative Affect scales, respectively.

Figure 4. COPE variables in the FOLLOW-UP
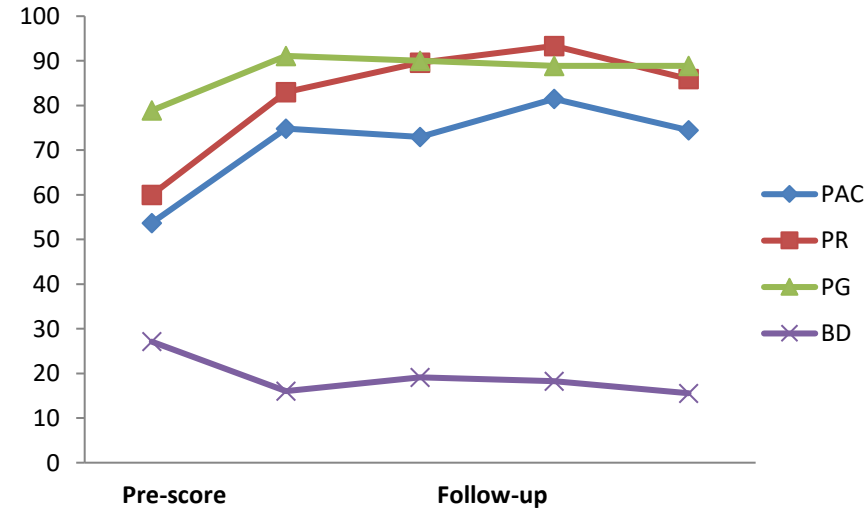
COPE = Coping Inventory; PAC= Planning and Active Coping; PR=Positive Reinterpretation; PG= Personal Growth; BD= Behavioral Disengagement.

Figure 5. PANAS variables in the FOLLOW-UP
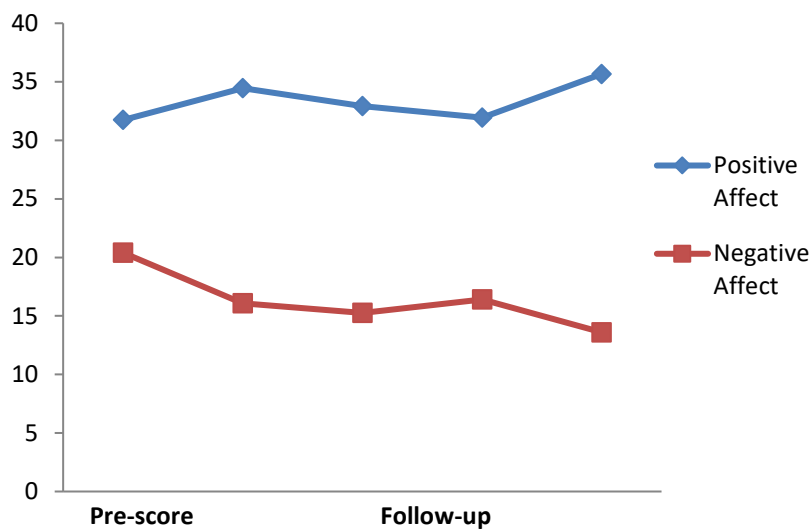
PANAS= Positive and Negative Affect Schedule.

4. Discussion

This is the first study to show the efficacy of a brief intervention based on reproducing the effects of illegal drugs, such as cannabis, cocaine and ecstasy, to improve coping skills and emotionality, and to increase positive emotionality and reduce negative emotionality. In addition, the SRT was superior to Hypnosis to increase both OS and SS from the BSS. Thus the hypotheses put forward at the beginning are confirmed.

In recent times, research that explore the impact of psychedelics has emerged, such as lysergic acid diethylamide (LSD) and psilocybin in psychotherapy (for reviews, see [23-27].

However recent research on psychedelics and hypnosis has appeared largely in isolation. The potential of harnessing the power of suggestion to influence the response to psychedelics may have implications for both clinical and basic research [28]. These authors found commonalities and differences between psychedelics and hypnosis that indicate the potential efficacy of combining both in psychotherapy, and they suggest a plan guide and integrate the psychedelic experience in order to enhance therapeutic outcomes.

Yet all of these studies are based on the Psychedelic-Assisted Psychotherapy approach. As Lemercier and Terhune [28] stated, one potential benefit of combining psychedelics and hypnosis could be to use suggestions to reproduce such experiences on the days following administration of psychedelics. Nonetheless, very few studies about this can be found, and they all indicate a single session (see [29,30]).

The SRT is a psychological procedure based on suggestion without hypnosis with proven efficacy in reproducing lots of different drug effects. It has also been used as a therapeutic technique to treat psychopatological symptoms in patients, like anxiety or depression, by reproducing ephedrine [11], and also improving coping skills and positive emotionality with methylphenidate [10].

In these cases, the patients were non-drug users who reproduced the effects they experienced with legal drugs. The SRT can also take advantage of the drug's power itself so that drugs can also increase hypnotic susceptibility. So methylphenidate enhancement of hypnotizability in adults with ADHD [31] and a low dose of ketamine in healthy volunteers can increase not only the subjective ratings of dissociation but also hypnotizability [32].

However these two studies were conducted with a single patient each according to a single case experimental design and a case study, respectively. This article attempts to move one step further by checking the effectiveness of the SRT increasing coping skills and emotionality by a detailed protocol and intra-group design. It was to increase the more positive view of problems, the ability to plan and to actively cope with problems, and to reduce the tendency to avoid them, and the experience of personal growth. The participants increased positive emotionality and reduced negative emotionality. These improvements remained and increased in some cases, over a 4-week follow-up.

This study has clear limitations that must be corrected in future studies. Thus including more participants is required as is the inclusion of a control group and a longer follow-up period. However, as previously stated, the real objective of this intervention was to improve and strengthen coping capacity and emotionality during a short period of time. In addition, several controls were established to improve the experimental design, for instance we applied a single-group interrupted time-series design with 10 scores per condition. The commonest threats to internal validity are: history, selection, instrumentation, regression, maturation [33]. In addition, certain conditions can reduce these threats: treatment onset is immediate, temporal time intervals are short, treatment effect is immediate, and the effect is large in relation to prior intertemporal variation [34]. These were the conditions that our experimental design meets. We also added an analysis of covariance (ANCOVA), which strengthened our design by enhancing the possibility of rejecting the null hypothesis [35]. Thus we observe that willingness to use certain coping strategies prior to intervention influenced the intervention results. More modulating variables should be considered in the future. Regarding the possible bias in the selection of the participants, it must be recognized that the impossibility of using these drugs for legal reasons entails having to form this type of sample, with a certain level of suggestibility and the ability to reproduce drug effects. As discussed above, the SRT is also useful for reproducing effects of those drugs administered for this purpose.

5. Conclusions

The fact that the effects produced by illegal drugs, such as those herein considered (cannabis, cocaine, ecstasy) can have clinical applications if psychological procedures like the SRT are employed, makes it reasonable to assume a strong impact in the psychotherapy and drug policy context.

Some alternative proposals exist for classifying drugs [36]. In this new classification, alcohol comes over as the most harmful drug, followed by heroin and crack cocaine. The other drugs (e.g. cocaine, cannabis, ecstasy) are shown as being less harmful. If we also consider that it is possible to take advantage of their effects with psychological techniques such as the SRT, then the reason for classifying them as dangerous and with little or no therapeutic value does not hold.

In short, and as far as we know, this is the first experimental confirmation following an intra-group design of the efficacy of combining the effects of illegal drugs with suggestion to improve human potentialities, such as coping skills and emotionality, which opens up an unusual field of clinical applications and can have a clear impact on new international drug policies.

References

1. Bahorik, A.L., Satre, D.D., Kline-Simon, A.H., Weisner, C.M., Campbell, C.I. Alcohol, cannabis, and opioid use disorders, and disease burden in an integrated health care system. *Journal of Addiction Medicine* **2017**, 11(1), 3-9. http://dx.doi.org/10.1097/ADM.0000000000000260.

2. National Institute of Drug Abuse (2020, October 20). Health Consequences of Drug Misuse. https://www.drugabuse.gov/drug-topics/health-consequences-drug-misuse (accessed on 15 February 2021).

3. United Nations Office on Drugs and Crime (2020, October 20). Treaties. https://www.unodc.org/unodc/en/treaties/ (accessed on 18 March 2021).

4. Boys, A.; Marsden, J.; Strang, J. Understanding reasons for drug use amongst young people: a functional perspective. *Health Education Research* **2001**, 16 (4), 457-469. http://dx.doi.org/10.1093/her/16.4.457.

5. Amigó, S. *Manual de terapia de auto-regulación. [Manual of self-regulation therapy]* Promolibro: Valencia, Spain, 1992.

6. Amigó, S. Sugar pills to experience cocaine and other drug effects: the Self-Regulation Therapy as a placebo without deception. *EC Neurology* **2016**, 3, 320-331.

7. Amigó, S. *Manual of controlled drug use*. LiberFactory: Madrid, Spain, 2014.

8. Amigó, S.; Caselles, A.; & Micó, J.C. Methylphenidate and the Self-Regulation Therapy increase happiness and reduce depression: a dynamical mathematical model [Paper presentation]. Mathematical Modelling in Engineering & Human Behaviour 2018 Conference. Polytechnic University of Valencia, Spain. 16-18 July 2018.

9. Amigó, S.; Ferrández, C. Experiencing Effects of Cocaine and Speed with Self-Regulation Therapy. *The Spanish Journal of Psychology* **2015**, 18, e49, 1-10. http//dx.doi.org/10.1017/sjp.2015.50.

10. Amigó, S. Uso potencial de metilfenidato y la sugestión en el tratamiento psicológico y en el aumento de las potencialidades humanas: Un estudio de caso [Potential use of methylphenidate and suggestion in the psychological treatment and in the increase of human potentialities: A case study]. *Análisis y Modificación de Conducta* **1997**, 23, 863–890.

11. Amigó, S. Self-Regulation therapy and the voluntary reproduction of stimulant effects of ephedrine: possible therapeutic applications. *Contemporary Hypnosis* **1994**, 11, 108-120.

12. Seligman, M. E.; Steen, T. A.; Park, N.; Peterson, C. Positive psychology progress: empirical validation of interventions. *American Psychologist* **2005**, 60 (5), 410-421. http://dx.doi.org/10.1037/0003-066X.60.5.410

13. Amigó, S. *Manual para el consumo moderado y responsable de las drogas [Manual for the moderate and responsible drugs use]*. Asociación Cultural y Científica Iberoamericana: Madrid, Spain, 2017.

14. Fisher, A. J.; Bosley, H. G.; Fernandez, K. C.; Reeves, J. W.; Soyster, P. D.; Diamond, A. E.; Barkin, J. Open trial of a personalized modular treatment for mood and anxiety. *Behaviour Research and Therapy* **2019**, 116, 69–79. https://doi.org/10.1016/j.brat.2019.01.010.

15. Barber, T. X.; Calverley, D. S. "Hypnotic-like" suggestibility in children and adults. *The Journal of Abnormal and Social Psychology* **1963**, 66(6), 589–597. https://doi.org/10.1037/h0041709.

16. González Ordi, H. (). Escala de Sugestionabilidad de Barber: traducción y adaptación al castellano. Ph.D Thesis, Universidad Complutense de Madrid, Madrid, Spain, 1987.

17. Morales-Homar, G.; Gallego-Sáez, L. M. Evaluación de la Sugestionabilidad. Quinto Congreso Virtual de Psiquiatría, Interpsiquis. 23 May 2004.

18. Fusté, A; Pellicer, X.; Ruíz, J. Propiedades psicométricas de "La Escala de Sugestionabilidad de Barber". Datos preliminares. III Congreso Nacional de Psicología,   Oviedo, Spain, 3-7 July 2017.

19. Carver, C. S.; Scheier, M. F.; Weintraub, J. K. Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology* **1989**, 56, 267-283. http://dx.doi.org/10.1037/0022-3514.56.2.267.

20. Crespo, M.; Cruzado, J. (). La evaluación del afrontamiento: adaptación española del cuestionario COPE con una muestra de estudiantes universitarios. *Análisis y Modificación de Conducta* **1997**, 23, 797-830.

21. Watson, D.; Clark, L. A.; Tellegen, A. Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology* **1988**, 54(6), 1063. http://dx.doi.org/10.1037/0022-3514.54.6.1063.

22. Sandín, B.; Chorot, P.; Lostao, L.; Joiner, T. E.; Santed, M. A.; Valiente, R. M. Escala PANAS de afecto positivo y negativo: validación factorial y convergencia transcultural. *Psicothema* **1999**, 11(1), 37-51.

23. Carhart-Harris, R. L.; Goodwin, G. M. The Therapeutic Potential of Psychedelic Drugs: Past, Present, and Future. *Neuropsychopharmacology: official publication of the American College of Neuropsychopharmacology* **2017**, 42(11), 2105–2113. https://doi.org/10.1038/npp.2017.84.

24. Fuentes, J.J.; Fonseca, F.; Elices, M., Farré M; Torrens M. Therapeutic Use of LSD in Psychiatry: A Systematic Review of Randomized-Controlled Clinical Trials. Frontiers in Psychiatry **2020**, 10, 943. https://doi.org/10.3389/fpsyt.2019.00943.

25. Johnson, M. W.; Griffiths, R. R. Potential Therapeutic Effects of Psilocybin. *Neurotherapeutics: the journal of the American Society for Experimental NeuroTherapeutics* **2017**, 14(3), 734–740. https://doi.org/10.1007/s13311-017-0542-y.

26. Liechti, M. E. Modern Clinical Research on LSD. *Neuropsychopharmacology: official publication of the American College of Neuropsychopharmacology* **201**7, 42(11), 2114–2127. https://doi.org/10.1038/npp.2017.86.

27. Reiff, C.M.; Richman, E.E.; Nemeroff, .CB.; Carpenter, L.L.; Widge, A.S.; Rodriguez, C.I.; Kalin, N.H.; McDonald, W.M. Psychedelics and Psychedelic-Assisted Psychotherapy. *American Journal of Psychiatry* **2020**, 177(5), 391-410. https://doi.org 10.1176/appi.ajp.2019.19010035.

28. Lemercier, C. E.; Terhune, D. B. Psychedelics and hypnosis: Commonalities and therapeutic implications. Journal of Psychopharmacology **2018**, 32(7), 732-740. http://dx.doi.org/10.1177/0269881118780714.

29. Hastings, A.   An extended nondrug MDMA-like experience evoked through posthypnotic suggestion. Journal of Psychoactive Drugs **2006**, 38(3), 273-283. http://dx.doi.org/10.1080/02791072.2006.10399853.

30. Lynn, S. J.; Evans, J. (). Hypnotic suggestion produces mystical-type experiences in the laboratory: A demonstration proof. *Psychology of Consciousness: Theory, Research, and Practice* **2017**, 4(1), 23–37. https://doi.org/10.1037/cns0000105.

31. Lotan, A.; Bonne, O.; Abramowitz, E.G. Methylphenidate facilitates hypnotizability in adults with ADHD: a naturalistic cohort study. *International Journal of Clinical and Experimental Hypnosis* **2015**, 63(3), 294-308. https://doi.org/10.1080/00207144.2015.1031547.

32. Patterson, D. R.; Hoffer, C.; Jensen, M. P.; Wiechman, S. A.; Sharar, S. R. Ketamine as a possible moderator of hypnotizability: a feasibility study. *The International Journal of Clinical and Experimental Hypnosis* **2018**, 66(3), 298–307. https://doi.org/10.1080/00207144.2018.1460559.

33. Shadish, W. R.; Cook, T. D.; Campbell, D. T. *Experimental and quasi-experimental designs for generalized causal inference*. Houghton Mifflin: Boston, USA, **2002**.

34. Cook, T. D., & Campbell, D. T. *Quasi-experimentation: Design and analysis issues for field settings*. Houghton Mifflin: Boston, USA, 1979.

35. Ramos-Alvarez, M.M.; Moreno-Fernández, M.M.; Valdés-Conroy, B.; Catena, A. Criteria of the peerreview process for publication of experimental and quasi-experimental research in Psychology: A guide for creating research papers. *International Journal of Clinical and Health Psychology* **2008**, 8, 751-764.

36. Global Commission on Drug Policy (2019). Classification of psychoactive substances: when science was left behind. https://www.globalcommissionondrugs.org/reports/classification-psychoactive-substances. (accessed on 21 May 2021).